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moved towards the margin, paused an instant, then deliberately plunged into the water. It swam strongly across the current, keeping its head, wrists, widely spread feet, and the tip of its tail above the surface, and making sculling strokes with its phalangeal membranes, which hung straight downward. The greater part of its back, and its interfemoral skin, except near the tip of the tail, were submerged. After reaching the ice a yard across the open stream, it turned and swam back, and attempted to clamber out at the point where it had entered. Like King Robert Bruce's spider, it made six vain trials but on the seventh it succeeded. It then shook itself in quadrupedal fashion, crawled across the ice to a nook beneath an overhanging rock, and lay still. I continued to watch it for five minutes, and was tempted to leave it until morning; but, realizing that it would soon be frozen to the spot, I picked it up.

In my hand it seemed perfectly active, at first struggling and biting characteristically, and giving vent to infinitesimal squeaks and to explosive puffs like the sound of a tiny one-cylinder engine. At times it would shake its head with a rapid vibration and snort loudly. Within a few moments it began to lick its membranes, comb its snout, ears and body with its long-clawed feet, then to clean the claws with its teeth, and, in short, to go through all the elaborate preening movements which make bats so extremely kitten-like. From time to time I noticed an evanescent, skunkish odor, which seemed as though it might be due to some periodical, perhaps defensive, glandular exudation. Its wet fur dried surprisingly quickly under the influences of the violent combing, and the high temperature that the animal soon developed by means of respirations at the rate of about 145 per minute.

The bat was an old female, with teeth worn down to a condition similar to that already described by Murphy and Nichols (*l. c.*, p. 8). Although it could have eaten no food for three months or more, it passed feces which proved to be composed principally of its own fur.

Probably the most noteworthy point about the whole incident is the record of an un-

wounded bat, certainly in full control of its bodily coordination, swimming in the icy water of a stream, apparently with intent.

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#### DR. HOBBS ON THE HISTORY OF SCIENCE

TO THE EDITOR OF SCIENCE: Touching the address of Professor William H. Hobbs to the Michigan Academy of Science, printed in SCIENCE (issue of May 11, 1917), I wish to point out:

1. That it is not customary among historians and students of history to consider the thousand years following the Hun invasions the "dark ages," or, as Professor Hobbs calls them, a "thousand years of stagnation" (p. 443) or "centuries of intellectual stagnation" (p. 442). No period which includes the thirteenth century can fairly be so described.

2. That Galileo never was tortured by the Inquisition (p. 443) and that the only "imprisonment" he suffered was in the homes of his friends.

3. That Giordano Bruno was burned for denying the divinity of Christ—not for advocating the Copernican doctrine.

4. That what Mr. Huxley termed "that chaff about the ego and the non-ego, about noumena and phenomena and all the rest of it, etc.," are not *mere* "metaphysical abstractions" in the sense that any thinking man can dispense with them. A thorough grounding in metaphysics (and logic) would be a very good start for a career in "science"; one does not know either intuitively and both are necessary for clear thinking and sound generalizing.

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#### SCIENTIFIC BOOKS

*Manual of Psychiatry.* Fourth edition. Revised and enlarged. By J. ROUGES DE FURSAC, M.D., and A. J. ROSANOFF, M.D. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Limited. 1916. 8vo. Pp. 522.

Brevity, clearness of diction and simplicity of presentation with a sufficiently small num-

ber of points of discussion—these are the points which make a popular text for students. De Fursac and Rosanoff's book has gained a well-deserved place with medical students through these qualifications, and it will deserve it even more fully in the present form. Up to the present edition the text kept apart the translation and the translator's annotations. This distinction has been obliterated and in reality the book has been adapted much more definitely to the needs of the American student, at least in the chapters entitled "The Practise of Psychiatry," which give a helpful picture of the present-day dispensary and state hospital practise.

The book represents a somewhat extraordinary combination in view of the fact that it is primarily an adaptation of the German psychiatry to a French public and then a re-adaptation to the American viewpoints. French psychiatry has in the meantime shown some evidences of revolt and repudiation, and American psychiatry, if we can speak in such a summary way, shows signs of a considerable degree of emancipation. For the purposes of the student, however, it is most important that he get some reasonably clarified starting point, and with the qualifications of the original description by Rosanoff, the transition is made reasonably easy and will no doubt offer a good basis for further emancipation as further editions will demand it. It may be possible to eliminate some unnecessary evidences of translation such as the reference on page 21 to Jean Muller, whom probably most of us know as Johannes Mueller.

"In the first part of the book, the chapters dealing with etiology, history taking, methods of examination, special diagnostic procedures, general prognosis, prevalence of mental disorders, prevention, and medico-legal questions, and, in the second part, those dealing with Huntington's chorea, cerebral syphilis, and traumatic psychoses are either wholly new or almost so.

"The chapter on general therapeutic indications, in the first part of the book, and those on dementia præcox, chronic alcoholism, general paresis, and mental disorders due to

organic cerebral affections, in the second part, have been more or less extensively revised or added to."

Rosanoff's standpoint with regard to heredity is very strongly emphasized in the book to the effect that he feels that "we are in a position to say to the people and to legislatures: Mental health is purchasable; the prevalence of mental disorders can be reduced for coming generations with the aid of dollars and cents spent for segregation in this generation."

For the problems of non-institutional care it might be wrong to expect too much help from a book. The problem of psychotherapy is treated rather briefly, but is one of those things that have to be learned from practise and with the help of special literature.

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#### SPECIAL ARTICLES

##### A SUGGESTION REGARDING THE MECHANISM OF ONE-SIDED PERMEABILITY IN LIVING TISSUES<sup>1</sup>

It is a familiar fact to physiologists that a large proportion of living tissues display a type of permeability markedly differing from the permeability or semipermeability of the majority of non-living membranes in that it is dependent upon direction, that is, upon the side of the membrane exposed to the dissolved substance. Among the almost numberless illustrations of this phenomenon which might be adduced it will be sufficient to cite the experiment of Cohnheim<sup>2</sup> in which a glucose solution, free from sodium chloride was introduced into an isolated loop of intestine. After the lapse of a certain period investigation of the residual fluid showed that while some fifty per cent. of the water and glucose had passed through the wall of the intestine into the blood stream, only an insignificant trace of sodium chloride had passed from the blood stream into the glucose solution. This is not the

<sup>1</sup> From the department of biochemistry, Rudolph Spreckels Physiological Laboratory, University of California.

<sup>2</sup> O. Cohnheim, *Zeitschrift f. Biologie*, 36 (1898), p. 129.